AMSAT News Service Weekly Bulletins
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AMSAT NEWS SERVICE
ANS-324

ANS is a free, weekly, news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

Please send any amateur satellite news or reports to:

ans-editor@amsat.org

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SB SAT @ AMSAT $ANS-324.01
Radio Ham Blasts Off to Space Station

AMSAT News Service Bulletin 324.01
>From AMSAT HQ SILVER SPRING, MD.
November 20, 2011
To All RADIO AMATEURS
BID: $ANS-324.01

Southgate ARC News web this week carried a story about Radio Amateur Daniel Burbank KC5ZSX aboard the Soyuz launch on November 14.

With him on Soyuz TMA-22 are commander Anton Shkaplerov and engineer Anatoly Ivanishin. They were meant to have launched on September 22, but the flight was delayed after an unmanned Progress cargo ship suffered a third stage malfunction during launch Aug. 24 and failed to reach orbit. The third stage of the cargo craft's rocket is virtually identical to the one used in the manned version.

They docked with the ISS on Wednesday, November 16. All the current ISS crew are Radio Amateurs - Expedition 29 commander Michael Fossum KF5AQG, Sergei Volkov U4MIR and Satoshi Furukawa KE5DAW.

Daniel Burbank KC5ZSX will be the Expedition 30 commander and will become the only Radio Amateur on the ISS when KF5AQG, U4MIR and KE5DAW return to Earth on November 21,

A summary of the mission can be found on-line at:
Space Flight Now - Expedition 29 Status
http://spaceflightnow.com/station/exp29/status.html

[ANS thanks Southgate ARC News for the above information]

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SB SAT @ AMSAT $ANS-324.02
CubeSat Keplerian Elements Under Analysis

AMSAT News Service Bulletin 324.02
>From AMSAT HQ SILVER SPRING, MD.
November 20, 2011
To All RADIO AMATEURS
BID: $ANS-324.02

Ray Hoad, WA5QGD, AMSAT Keeper of the Keps this week answered the question of which Keplerian Elements match each of the cubesats launched on October 28, 2011. Ray commented, "The identification of the satellites continues. Simply put, we don't have enough separation to make a positive identification."

Nico Janssen, PA0DLO, has been analyzing various aspects of the satellite group (grouping, radar cross section, and order of launch from rocket body). He concludes that we need more time and separation to be sure. Nico's best educated guess at this time is as follows:

+ Explorer 1 Prime is Object G, Cat # 37855
+ Aubiesat (AO-71) and M-cubed, are in the same group as Objects E and F.
+ The two DICE satellites (commercial, non amateur) are Objects C and D.
+ RAX2 is Object B, Cat # 37850.

Nico reminds us that this is a best guess and only time will tell who is who. Thanks Nico for sharing your thoughts with us.

Here are this weeks KEPs for the latest Cubesat flock:

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OBJECTB
1 37850U 11061B   11314.31682443  .00000489  00000-0  51357-4 0 00169
2 37850 101.7053 249.9601 0255846 255.5306 101.7516 14.77614148001891
OBJECTC
1 37851U 11061C   11317.83772545  .00009599  00000-0  78565-3 0 00253
2 37851 101.7037 255.0640 0254660 246.5170 110.9070 14.77729084002420
OBJECTD
1 37852U 11061D   11318.85323228  .00010618  00000-0  86612-3 0   174
2 37852 101.7048 256.5342 0254778 243.6020 113.8822 14.77773735  2564
OBJECTE
1 37853U 11061E   11317.83714479  .00010430  00000-0  85168-3 0 00441
2 37853 101.6978 255.0557 0254457 246.6876 110.7358 14.77795553002421
OBJECTF
1 37854U 11061F   11318.51214050  .00011655  00000-0  93205-3 0   203
2 37854 101.7001 256.0511 0257496 245.1384 112.2875 14.78001563  2507
OBJECTG
1 37855U 11061G   11318.85081525  .00010458  00000-0  84381-3 0   171
2 37855 101.7008 256.5373 0255959 243.3435 114.1347 14.77981238  2550
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[ANS thanks Ray Hoad, WA5QGD, for the above information]

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SB SAT @ AMSAT $ANS-324.03
Arizona Centennial Special Event Plans Satellite Operation

AMSAT News Service Bulletin 324.03

>From AMSAT HQ SILVER SPRING, MD.
November 20, 2011
To All RADIO AMATEURS
BID: $ANS-324.03

The Central Arizona DX Association (CADXA) is very pleased to announce their special event operation in celebration of the Arizona Centennial during the week of February 13-19th, 2012.

They will be using the callsign of the late Senior Senator, and Arizona native son, Barry M. Goldwater, K7UGA.

Individual CADXA members will be operating from their home stations located throughout Arizona during that week using the callsign K7UGA.

However, only special operating locations from Tucson, Prescott and Phoenix will be on the air celebrating the 100th anniversary on Tuesday, February 14th, 2012.

Operations will be on all amateur bands (160-2 meters); and will be using CW, SSB, RTTY, PSK31 and Satellite modes.

This CADXA special event operation has proudly received recognition from the 2012 Arizona Centennial Foundation as a sanctioned "Special Event"; and from the Arizona Historical Advisory Commission as an official "Centennial Legacy Project".

All QSL requests go to Bob Davies - K7BHM (qrz.com) with an SASE.

For more details, please go to the CADXA Web site at:
http://www.cadxa.org

[ANS thanks CADXA and Southgate ARC News for the above information]

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SB SAT @ AMSAT $ANS-324.04
Amateur Radio Assistance Requested: ISS Plasma Thrust Shadow Experiment

AMSAT News Service Bulletin 324.04
>From AMSAT HQ SILVER SPRING, MD.
November 20, 2011
To All RADIO AMATEURS
BID: $ANS-324.04

The Central Research Institute of Machine Building (TSNIIMASH) in Russia is conducting a series of space plasma experiments in order to evaluate the shape of previously observed "dead" zone, or shadowing due to the firing of an onboard arcjet plasma source.

Radio Amateurs are invited to participate in the Space plasma experiment "Shadow" onboard International Space Station (ISS). Integration of Electric Thrust onboard a spacecraft poses a certain set of problems including electromagnetic compatibility of ET. One matter of interest is that highly ionized exhaust plumes of ET may scatter RF-signals producing large "dead" zone for communications.

This plasma screening effect should be thoroughly studied before electric thrusters become standard onboard equipment. The investigation will help designers of future electrically propelled spacecraft to minimize the hazard of communication disruption by ET plasma

plumes.

The Central Research Institute has proposed an experiment using the worldwide distribution of radio amateurs to receive the VHF packet downlink (145.825 MHz) from a new plasma space experiment on the International Space Station.

The amateur packet radio technology in the SpEx "Shadow" as proposed by astronaut Alexander Kalery, will use the AX25 packets transmitted by "Master Stations" and reported by receiving amateur radio ground stations to track the effect of the plasma shadow.

The SpEx experiment will be enabled on the following schedule:

SpEX Time On	SpEX Time Off
November 25 1650 UTC	November 28 0825 UTC
December 2 1650 UTC	December 5 0825 UTC

The master beacon stations for Europe, Asia, North America, and Australia can be found at:
http://tinyurl.com/84nvl72 (knts.tsniimash.ru)

The main web page for the SpEx project can be found at:
http://knts.tsniimash.ru/Shadow/en/Overview.aspx
This page contains a detailed description of the experiment and instructions for submitting your signal reports.

An example of the SpEx packets received by Mike Rupprecht, DK3WN can be seen at: http://www.dk3wn.info/p/?p#866

[ANS thanks TSNIIMASH for the above information]

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SB SAT @ AMSAT $ANS-324.05
Ultimate HEO: Voyager 2 Completes Switch to Backup Thruster Set

AMSAT News Service Bulletin 324.05
>From AMSAT HQ SILVER SPRING, MD.
November 20, 2011
To All RADIO AMATEURS
BID: $ANS-324.05

This week Space-Travel.com reported that NASA's Voyager 2 has successfully switched to the backup set of thrusters that controls the roll of the spacecraft.

Deep Space Network personnel sent commands to the spacecraft to make the change on Nov. 4 and received confirmation that the switch has been made.

Voyager 1 and Voyager 2 are each equipped with six sets, or pairs, of thrusters to control the pitch, yaw and roll motions of the spacecraft.

These include three pairs of primary thrusters and three backup, or redundant, pairs. Both spacecraft are now using all three sets of their backup thrusters.

Voyager 2 is currently located about 9 billion miles (14 billion kilometers) from Earth in the heliosheath - the outermost layer of the heliosphere where the solar wind, which streams out from

the sun, is slowed by the pressure of interstellar gas.

The Voyagers were built by NASA's Jet Propulsion Laboratory in Pasadena, Calif., which continues to operate both spacecraft. JPL is a division of the California Institute of Technology in Pasadena.

The Voyager missions are a part of the NASA Heliophysics System Observatory, sponsored by the Heliophysics Division of the Science Mission Directorate. The original story is published at: http://tinyurl.com/cquqws6 (space-travel.com)

[ANS thanks space-travel.com for the above information]

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SB SAT @ AMSAT $ANS-324.06
AMSAT Submits Proposal to NASA for Fox-1 Satellite

AMSAT News Service Bulletin 324.06
>From AMSAT HQ SILVER SPRING, MD.
November 20, 2011
To All RADIO AMATEURS
BID: $ANS-324.06

On Monday, Nov. 14, AMSAT submitted a proposal to NASA for their CubeSat Launch Initiative, also known as the "Educational Launch of NanoSat" (ELaNa) program. NASA selects projects that they deem to have merit in support of their strategic and educational goals. Projects that are selected will be able to enter into a collaboration agreement where NASA will cover the integration and launch costs of the satellite.

AMSAT, working with ARRL, highlighted the educational merit of the project including the incorporation of Fox-1 into the ARRL Teacher Institute seminars. ARRL also provided a letter of support for the project that was a key component of our proposal.

The Clay Center for Science and Technology at the Dexter and Southfield schools in Brookline MA, also provided a letter of support that was an important part of our proposal. The Clay Center noted that they use AMSAT satellites such as ARISSat-1 in their educational activities for K-12 students and that they look forward to making use of Fox-1.

The completed proposal, at 159 total pages, required a significant effort that was all done by volunteers. NASA will select from all of the submissions and announce the winning projects by January 30, 2012.

[ANS thanks AMSAT Vice-President of Engineering, Tony Monteiro, AA2TX for the above information]

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SB SAT @ AMSAT $ANS-324.07
70cm Amateur Station Active on Packet from ISS Columbus Module

AMSAT News Service Bulletin 324.07
>From AMSAT HQ SILVER SPRING, MD.
November 20, 2011
To All RADIO AMATEURS
BID: $ANS-324.07

The amateur radio station located in the Columbus module is currently operational with the UHF Ericsson transceiver and packet system using the frequency of 437.550 MHz. To utilize the packet system, operators need to set the UNPROTO path to ARISS (the id is RS0ISS) for digi relay or they may connect to the BBS using the callsign RS0ISS-1. The packet beacon is set for 2 minute intervals so it may not appear to be active over many parts of the world but keep listening and mind the Doppler shift (+ or - 10 KHz).

[ANS thanks Kenneth Ransom, N5VHO for the above information]

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SB SAT @ AMSAT $ANS-324.08
ARISS Status - 14 November 2011

AMSAT News Service Bulletin 324.08
>From AMSAT HQ SILVER SPRING, MD.
November 20, 2011
To All RADIO AMATEURS
BID: $ANS-324.08

1. School Contacts

An Amateur Radio on the International Space Station (ARISS) contact was successful for A.S.J. Memorial High School, Thetford Mines, Qu�bec, Canada on Monday, November 14 at 15:41 UTC. The school formed a space club and students were taught about the ISS, radio equipment and radio protocol.

Johnson Space Center (JSC) Education in Houston, Texas completed a scheduled contact for an Amateur Radio on the International Space Station (ARISS) contact on Tuesday, November 15 at 15:39 UTC via station VK5ZAI in Australia. Interns and co-ops at JSC participating in the contact learned about amateur radio technology. Teaching From Space (TFS), a NASA Education office, will help facilitate the event. TFS promotes learning opportunities and builds partnerships with the education community using the unique environment of space and NASA's human spaceflight program. The students participating in the contact come from the Space Grant Program, the University Research Centers Program, the Undergraduate Student Research Project, and JSC's internal co-op program operated through the JSC Human Resources Department. Each of these programs provides students the opportunity to have hands-on, real-life, career-related experiences that challenge, inspire, and provide practical application that complements and expands upon the students' academic education.

2. Hospitalized Students Participate in ARISS Contact

On Wednesday, November 9, an Amateur Radio on the International Space Station (ARISS) contact was held between children at the Rehabilitationszentrum f�r Kinder und Jugendliche in Affoltern am Albis,
Switzerland and ISS Astronaut Satoshi Furukawa, KE5DAW. The venue of this contact was a hospital school that is attended by children during their rehabilitation. Furukawa was able to answer 13 questions from 9 students during the event, which was attended by approximately 50 people. The contact had a great impact on the students. For example, one 14 year old, suffering from a cerebral hemorrhage and unable to speak normally, made a tremendous effort to practice his questions for the contact. Through this event, students learned about space, satellites, radio waves and propagation of radio waves.

3. New York Students Contact ISS

Students attending Donald P. Sutherland School in Nassau, New York took part in a successful Amateur Radio on the International Space Station (ARISS) contact on Thursday, November 10. The children were able to get in all of their questions during the pass, with time for a goodbye to Astronaut Mike Fossum. The contact was integrated into Language Arts, Mathematics and Technology, Science, Social Studies, Music, Art, Physical Education, and Character Education. Web sites such as NASA Kids and the NASA Digital Learning Network were also utilized by teachers and students to prepare for this event. WNYT posted video and a story, "Nassau elementary students talk to an astronaut" at: http://thegreenbushes.wnyt.com/news/news/93797-nassau-elementary-students-talk-astronaut

4. ARISS Contact Integrated into EduSat Project

Bari, Italy students attending I.I.S.S. "G. Marconi" School participated in an Amateur Radio on the International Space Station (ARISS) contact on Saturday, November 12 via station IK1SLD in Italy. Astronaut Mike Fossum, KF5AQG fielded 10 questions put to him by the students with enough time left to exchange greetings. Local and regional media covered the event. "G. Marconi" is a scientific high school that specializes in technology. More than 600 students are enrolled at the school and the ARI (Radioamateur Association of Bari) is a part of the ISS "Marconi" body. The Institute participates in the EduSat project, headed by ASI (Italian Space Agency) in collaboration with IMT - Ingegneria Marketing e Tecnologia (Italian SME). The ARISS contact was integrated into the EduSat project through which students are studying aerospace, space telecommunications and satellite subsystems.

5. ARISS Represented at AMSAT Symposium

AMSAT held its annual Space Symposium in San Jose, California on November 4-6. Dave Taylor, W8AAS (AMSAT-NA US Delegate to ARISS-I) reported to the Board of Directors on ARISS activities over the past year. He also presented a paper on "ARISS and Education" at the general meeting, on behalf of the paper's authors: Mark Steiner, K3MS, Rosalie White, K1STO, and Debbie Biggs.

ARISSat-1 was a popular topic, with 5 papers presented about topics including telemetry decoding, operations, and lessons learned. Lou McFadin, W5DID (ARISS hardware lead) talked about the "Fabrication, Integration and Testing of ARRISat-1".

A major thrust of the symposium was education and how AMSAT can (and must) provide a complete educational package for its satellites, both to encourage participation in amateur radio and to obtain affordable launch opportunities. AMSAT President Barry Baines, WD4ASW, made this point repeatedly. A number of papers also addressed education from various angles. Several AMSAT members attending the symposium formed a team to develop educational products targeted directly at national STEM requirements. They plan to have amateur radio and satellite activities that teachers can drop into their curriculum. They hope to have the first few of these available for use while ARISSat-1 is still operational, and then develop more for continuing use to benefit ARISS and future AMSAT satellites.

6. ARRL QST on ARISS

The American Radio Relay League (ARRL) covered ARISS in its December 2011 issue of QST. The "In Brief" column carried a short item about Astronaut Mike Fossum, KF5AQG, operating on the air while on-orbit

during JOTA in October.

[ANS thanks Carol, KB3LKI, for the above information]

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In addition to regular membership, AMSAT offers membership in the
President's Club. Members of the President's Club, as sustaining donors
to AMSAT Project Funds, will be eligible to receive additional benefits.
Application forms are available from the AMSAT Office.

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This week's ANS Editor,
Dee Interdonato, NB2F